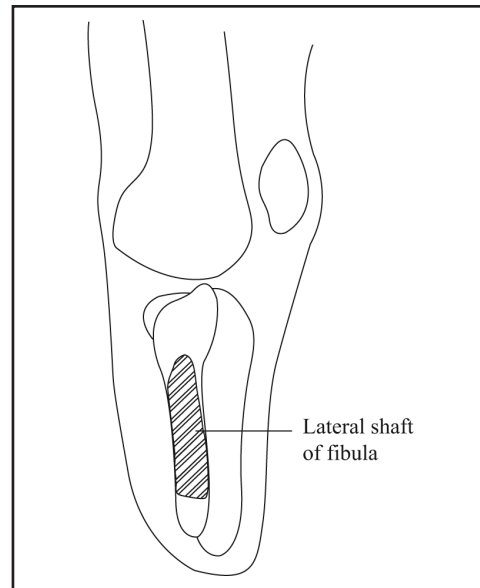


**Figure 4-1.** Anterior view of the amputation limb, showing pressure-tolerant areas.



**Figure 4-2.** Lateral view of the amputation limb, showing pressure-tolerant areas.

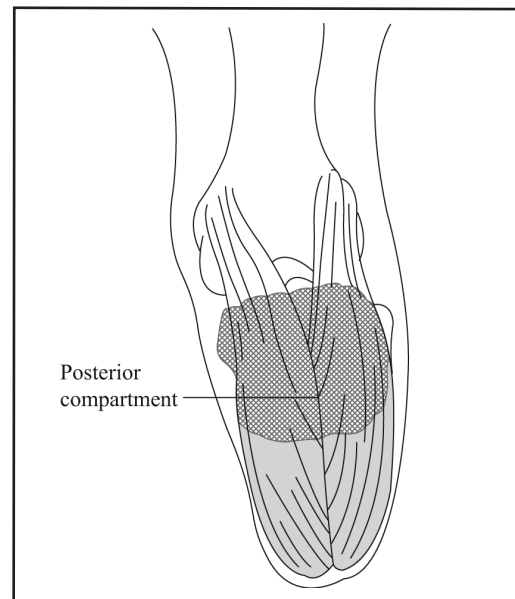
The oldest contemporary transtibial socket design is the patellar tendon bearing (PTB), introduced in the 1960s. This socket features a pronounced buildup over the patellar ligament (patellar tendon; Figures 4-7 to 4-9).

A newer design is the total surface bearing (TSB; Figure 4-10), which resembles the PTB socket, although the anterior buildup is reduced, avoiding the skin irritation experienced by some PTB wearers. Other buildups and reliefs are similar to those in the PTB socket. In comparison with prostheses with PTB sockets, those with TSB sockets are lighter and more securely suspended; wearers also applied greater load to the prosthesis.<sup>1</sup> Subjectively, wearers preferred the TSB design for its greater comfort, ease of flexing the knee, reduced slippage, less skin irritation, better appearance, and greater durability.<sup>2</sup> Other investigators reported no significant difference between prostheses with PTB and with TSB sockets with regard to patient satisfaction, extent of activity, and gait analysis.<sup>3</sup>

The hydrostatic socket is molded over a model of the patient's amputation limb and is made as the prosthetist applies downward pressure over the distal tissues. The hydrostatic socket thus has more distal soft tissue cushioning than the PTB or TSB sockets.

## ALIGNMENT

Placement of the socket relative to the foot is important in enhancing the wearer's comfort beyond that achieved by socket design and fit. The patient's walking ease is also influenced by alignment. After the socket is made, it is placed on a block of wood, the bottom of which is level with the floor. Strategic angulation of the socket on the block influences comfort and gait. The



**Figure 4-3.** Posterior view of the amputation limb, showing pressure-tolerant areas.

socket and block are then placed on an adjustable leg, an apparatus consisting of plates that can slide and rotate over a rather large range. The distal end of the adjustable leg is fitted to the prosthetic foot with its shoe. *Bench alignment* refers to placement of the components according to established standards. Dynamic alignment occurs when the patient wears the adjustable leg, standing and walking on it. The prosthetist achieves optimal alignment by observing the patient's performance and by responding to the patient's comments. Alignment